

THE CIRPHIS PSEUDARGYRIA COMPLEX (LEPIDOPTERA: NOCTUIDÆ)

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Cirphis pseudargyria has always been considered a well defined and well isolated species, with no close relatives in America save the rare Floridian *C. pilipalpis* Grote. Examination of the male structures shows that there are four species, strikingly different in male antenna, palpi, leg tuftings and genitalia, but practically identical in markings. I am convinced that the true *pseudargyria* Guenée* is the one figured by J. B. Smith (Proc. U. S. Nat. Mus. xxv, pl. v, fig. 2, genitalia), Hampson (Cat. Lep. Phal. v, 481, fig. 147) and Holland (Moth Book pl. xxiv, fig. 47). This is the only one that has the red tinted markings, shared by the European *C. lithargyrea* with which Guenée compares it, and this is the species that has a red form (*callida* Grote) so similar in tint to *C. obusta* Guenée (Hampson pl. xci, fig. 17) that Smith might easily have called them identical in a memory comparison (U. S. Nat. Mus. Bull. 44, p. 190). It also has a form in which the darker markings are more or less shaded and frosted with very dull red (typical) and one with the red practically wholly replaced by gray (corresponding to *lithargyrea*, ab. A of Guenée, ab. 1 of Hampson, *derufata* Strand).

These three species are so nearly identical that as a whole Hampson's description will serve for all three, save that for form *derufata* of *pseudargyria*, and the other three species the words implying reddish tints should be replaced by "gray"; and except for the few points in the following comparative descriptions.

* Since this was written Mr. J. W. Cadbury, 3rd, has kindly compared the material in the British Museum. Guenée's type of *pseudargyria* is this species. The material now standing as *derufata* Strand is a mixture of *ursula* and *inermis*, but there is no certainty that Hampson's "Ab. 1" was entirely based on them, since he did not specially label the specimens of his unnamed aberrations, and they were partly based on material in other collections, remarks in the literature, and perhaps even on specimens since discarded.

Cirphis pseudargyria Guenée

1852. *Leucania pseudargyria* Guenée, Hist Nat. Ins. Lep. (Het.) v, 74.
 1893. *Leucania pseudargyria* Smith, U. S. Nat. Mus. Bull. xliv, 189 (bibliography, except ref. to *obusta* Guenée).
 1902. *Leucania pseudargyria* Smith, U. S. Nat. Mus., Proc. xxv, 178, in part, pl. v, fig. 2 (♂ valve).
 1903. *Heliophila pseudargyria* Holland, Moth Book, 201, pl. xxiv, fig. 47 ♀.
 1905. *Cirphis pseudargyria* Hampson, Cat. Lep. Phal., v, 481, fig. 147 (except note "The single gray male from Canada.")

Variety *callida* Grote

1882. *L. p.* var. *callida* Grote New List 30, note.
 1893. *L. p.* var. *obusta* Smith, l. c.
 1902. *L. p.* var. *callida* Smith, l. c.

Variety *derufata* Strand*

1905. *C. p.* Ab. 1, Hampson, l. c.
 1916. *Cirphis pseudargyria*, ab. *derufata* Strand, Archiv für Naturg. A 1916 (2) 30.
 1925. *Cirphis pseudargyria* form *callida* Draudt, Seitz Macrolep. World, xi, 163 (in error).

Darker markings of *fore wing* shading from very dull red (fawn color, 13''' of Ridgway, to army brown, 13i''' of Ridgway) to a pure gray (var. *derufata* Strd.), rarely wholly of the army brown except for the pale lower half of the reniform (*callida* Grt.).

Discal lunule of under side of hind wing, usually absent.

Male front fuscous, shading into dull red above.

Palpi blackish, contrasting, very high in proportion, shaggy.

Pectus heavily shaded with the dull red, and some gray.

* Strand's description has nothing tangible, and could apply equally to any one of the three species; presumably there is no type, and the type locality is merely "North America." To judge by his usual custom it is probably based on the general statements in the literature and Hampson's in particular that *pseudargyria* has a gray phase. My assumption that it represents the gray form of true *pseudargyria* is arbitrary, but the alternative would be to treat it as a hopelessly ambiguous "nomen inquirendum."

Male antenna: Lower posterior row of setæ abruptly much enlarged, beginning about the 15th segment, occasionally the first long one separated by a segment or two from the next. Upper posterior row beginning to be long similarly at about segment 20; anterior rows at the terminal brush only; setæ about 3 times as long as width of segments; terminal brush of 25 or 30 extremely small and short segments, with very long setæ on all four rows.

Fore tibia with massive triangular tuft, its hairs toward base erected almost perpendicularly and much longer than length of tibia; blackish, with the outer part paler and reddish; metatarsus with triangular tuft continuing the tibial tuft, (misfigured by Hampson.)

Mid tibia with massive outer tuft, but only rough hair on metatarsus.

Hind tibia moderately tufted, much smaller than fore and middle tibiæ.

Preanal tuft (retractile, on eighth segment) massive.

Male genitalia (fig. 1): *Uncus* with slender stem and circular terminal disc about $\frac{1}{3}$ its length, heavily spined all around the under side (seen obliquely in the figure).

Valve: Terminal lobe bluntly rounded.

Hairy pad at base broad, about half as long as width of terminal lobe.

Clasper with spines at upper and lower outer angles, moderate in width; the lower outer spine just reaching the edge of the recess in the valve which contains it; terminal spine slender, as long as width of clasper.

Juxta moderately chitinized, vaguely emarginate at tip.

Penis with large spine slenderer than in *C. inermis*; small spines well developed, the more basal ones fused into a multidentate plate.

Female. Generally distinguishable by its large size (full 40 mm.), reddish tint, almost always more or less visible on front and pectus if not on wing, and very weak or absent discal lunule on under side of hind wing. Tibiæ a little more hairy than in *C. inermis* ♀, almost as hairy as its male. The female is not noticeably smaller than the male, and Smith's statement to that effect is probably due to his mistaking specimens of *inermis* for females

of this. Ithaca dates indicate a single brood in mid-July, flying a little later (Aug.) at McLean, and at Orono, Me.

***Cirphis ursula* new species**

1905. (Larva only) *Cirphis pseudargyria* Dyar in Hampson, Cat. Lep. Phal. v, 481.

Average expanse of summer brood 30 mm., spring brood larger, but rarely reaching 40 mm.

Fore wing without any trace of reddish tint in the dark markings, which are otherwise identical with *C. pseudargyria*; terminal half of fringe often (perhaps always when fresh) pinkish-glossed.

Discal lunule of under side of hind wing distinct.

Male front fuscous across middle, without reddish tint, contrasting light clay color below.

Male palpi much broadened below with close-set short small luteous scales, which tend to make a sharp ridge on inner ventral side; wider than high; upper part of sides more or less fuscous.

Pectus solidly blackish, making a conspicuous dark patch with the fore leg tuftings, contrasting with palpi.

Male antenna: Lower posterior row of setæ commencing to be enlarged about the 15th segment but very gradually; upper posterior row similarly gradually enlarged at about the middle of the antenna (near segment 30); anterior rows not much lengthened even on the terminal brush; setæ about twice as long as thickness of shaft; terminal brush less specialized, the segments longer and the setæ only about 4 time as long as their width.

Fore tibia with outer tuft even longer than in *C. pseudargyria*, nearly twice as long as tibia, when perfect sheared off evenly in an arc whose center is at the knee; also with a shorter massive truncate tuft on inner side of knee; *metatarsus* with a small triangular tuft, well set off from the tibial one; the hairs of the outer tibial tuft becoming blackish toward their tips.

Mid tibia with a massive but shapeless paler tuft; *metatarsus* with clean-cut triangular tuft.

Hind tibia with abundant loose hair on outer side.

Preanal tuft about as in *pseudargyria*.

Male genitalia (fig. 2): *Uncus* with terminal spoon-shaped expansion, tapering toward base, and gradually reaching the width of its stem at about half its length; spines of under side weaker, on edges of its terminal half.

Valve: *Terminal lobe* roundly pointed.

Hairy pad much as in *pseudargyria*, rather weaker.

Clasper with a rudimentary spine at outer upper angle only, much narrower, nowhere reaching the edge of recess in valve; *terminal spine* extending far beyond its outer edge, stouter than in *pseudargyria*.

Juxta heavily chitinized, sharply bifid at tip.

Penis with smaller spines rudimentary, apparently without fused spines.

Ithaca, New York, late May to early June (large specimens); August; late Sept. to Nov. 1; (holotype and many paratypes);

Kinderhook and Orient, L. I., N. Y., the latter collected by Latham; Pleasant Valley, Conn. (? coll. Pasch, without label); Arendtsville, Pa. (Frost); Alexandria, Va., May 27, '17 (Bradley), the two latter records based on single females. The species evidently has two broods and a partial third, late specimens being relatively rare, and midsummer ones sometimes abundant. Cornell University, type No. 1393.

There are also the following paratypes in the U. S. National Museum, besides a few females from other localities not safely determined: Newton Highlands and Chicopee, Mass., Long Id., N. Y. (spring specimens only, one determined as *callida* in Neumoegen collection*), Lakehurst, N. J. (♀ only), Washington, D. C., Cape Henry, Va., Tryon, N. Y. (♀ only), New Brighton, Pa. (♀ only), Decatur, Ill. (spring form only), and Iowa City, Ia. A single female from Glenwood Springs, Colo., April, is likely to belong here also.

Female. Summer and fall specimens distinguishable by their small size; spring ones not certainly separable from *C. inermis*. None show the reddish tints of front, pectus and wings of *C. pseudargyria*, and the discal lunule is always distinct, often large. I am inclined to believe the tibiae are more hairy than those of *C. inermis*, but have not enough perfect material to be sure.

I am able to examine the larva described by Dyar and its associated moth through the courtesy of Mr. Benjamin. The moth is a female but seems safely this species rather than *inermis*. Caterpillar cream, reticulate with brown. Head shining, front with a vague vertical brown bar only, adf. immaculate; epicrania coarsely reticulate, with the pattern flowing together into two vertical brown stripes down the front of the epicrania, diverging

* Mr. Benjamin would consider this determination authentic. I cannot believe that a form whose only description is the single word "red" can be truly represented by a specimen that is grayer than the great majority of the specimens of this complex. The U. S. National Museum, to be sure, has a striking lack of the reddish specimens, but this is true of no other collection I have seen, and I suspect some secondary disturbance. Even on a memory comparison I do not believe that Smith could mistake the solid reddish *obusta* (Hampson, Cat. Lep. Phal. v, pl. 91, fig. 17) for this gray species, especially as his figure of the genitalia shows he had a correct conception of *pseudargyria*.

below, and running closely parallel to adfrontals. Body with dorsum a little darker, especially at edges, and a darker suprastigmatal band. Fine pale lines, all defined with slender darker shades; dorsal, subdorsal (below ii), lateral (above iii) and stigmatal, and faint stripes subventrally. Ventral leg plates shining brown; the prothorax and anal leg-plates dark, but mottled and not shining. Spiracles black. The specimen is an inflation, and may have been more grayish or greenish in life.

***Cirphis inermis* new species**

Average expanse 35 mm.

Fore wing without any reddish tint, the markings frequently absolutely identical with the preceding, but more often with the dark subterminal shade opposite the cell a little stronger. Pink iridescence practically wanting, but just traceable in a favorable light.

Discal lunule well marked.

Male front light (clay color) except at sides, which are blackish, with a little reddish tint.

Palpi higher than wide, the scaling as smooth as in the preceding, but not as fine, much like females of all three species; shaded in varying proportions of blackish and luteous, usually with the boundary indefinite.

Pectus nearly concolorous, not conspicuously either reddish or blackish.

Male antenna unmodified, the four rows of setæ all similar, short, and terminal segments not specialized.

Fore tibia with tuft small, its hairs much shorter than length of tibia, the *metatarsus* without a special tuft.

Mid and hind tibiæ similar.

Male genitalia (fig. 3): *Uncus* spatulate, long, abruptly narrowing near the point of attachment only; the spines on under side weak and only along its apical third.

Valve: *Terminal lobe* as in *pseudargyria*.

Hairy pad long and narrow, covering the whole joint between terminal lobe and body of valve.

Clasper enormously widened on upper half, extending over the edge of the recess; *terminal spine* massive, but much shorter, the outer angles rounded over without trace of spines.

Juxta shapeless, not bifid.

Penis with largest spine massive, small spines as in *pseudargyria*.

Female practically identical with the preceding; the tibiæ with very little loose hair.

Ithaca, N. Y., end of May to early July, not rare in 1919 and 1922. Females from Peru, July 4, and Rock City, June 11 (Fbs.), and Greenpoint, (L. I.), N. Y., Aug. 1 (Latham), also

from Fredericksburg, Va., May 30 (Bradley) appear to belong to this species. Hampson reports this species (cf. by Cadbury) from Canada ("The single gray male," under *pseudargyria*). Ithaca dates indicate a single brood, with the climax in June, but the August female from L. I. if correctly associated, indicates a second brood there. The United States National Museum has paratypes from Center (Karner) and Forest Park (L. I.), N. Y., besides a couple of doubtful females.

***Cirphis calidior* new species**

Expanse 38 mm.

Fore wing without reddish tint, but more buffy than the other species, the oblique blackish dash to apex almost sharp, and conspicuous; discal dot conspicuous, much stronger than in *pseudargyria*, though matched by some specimens of the other species.

Discal lunule of hind wing below, strong.

Male front clay color, with small blackish patches at sides only.

Palpi not modified; mostly clay color, the inner face contrastingly dark.

Pectus clay color, dark gray on sides, the hair mixing with the similar dark gray tuft of the fore femur.

Male antenna simple.

Fore tibia with large triangular tuft, mostly clay color, but the hair from toward base of tibia darker; *femur* with dark hair; *metatarsus* with smaller but similar tuft.

Mid tibia with large pale tuft; the *metatarsal* tuft as large as in *C. ursula*, but looser.

Male genitalia (fig. 4): *uncus* slender, only a little widened to tip, the bristles not very strong and gradually fading out down the shaft.

Valve: *Terminal lobe* subtriangular, with outer edge relatively much shorter than in *C. ursula*; some of its setæ set back from the margin.

Hairy pad short and small.

Clasper much widened outwardly, but with its lower part more widened than the upper, unlike *C. inermis*, the upper outer angle sharp, and lower angle marked; *terminal spine* diverging more from rest of clasper than in the remaining species.

Juxta long, slightly bifid, with slight central keel.

Penis with two massive spines; unlike the others, which have one of the spines very slender.

Female not seen, perhaps separable by the oblique apical dash.

Clarke County, Georgia, Aug. 12, 1928 (A. G. Richards).
Type unique, donated by Dr. Richards to the U. S. National Museum.

Cirphis pilipalpis from Florida also belongs to this group. Both sexes can be distinguished by the long cylindrical second segment of the palpus, with a large fanlike tuft near its tip above in the male, and a weak tuft in the female. Tibiæ and fore metatarsus only moderately tufted, but mid metatarsus with a distinct triangular tuft as in *C. ursula*. Antenna with upper posterior setæ abruptly lengthened beginning about the middle of the shaft, lower posterior setæ very gradually lengthening from near base. Postmedial line continuous, scalloped, as in some specimens of *C. inermis*, but more contrasting.

PLATE VI

The figures are of the male genitalia, opened from the ventral side, with the left valve removed and the penis drawn separately.

Figure 1. *Cirphis pseudargyria* Guenée; 1a, clasper of another specimen, drawn separately. (jx. is the juxta)

Figure 2. *Cirphis ursula*, new species; 2a, clasper of another specimen.

Figure 3. *Cirphis inermis*, new species; 3a, clasper of another specimen.

Figure 4. *Cirphis calidior*, new species, with clasper also drawn separately.

